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ABSTRACT

Recently, interest in research measuring stream of consciousness or thought has increased. A study was conducted, based on a previous study by Hurlburt, Lech, and Saltman, in which subjects were randomly interrupted to rate their thoughts and moods on a Likert-type scale. Thought samples were collected from 27 subjects who carried random-tone generators continuously for 3 days as they moved through their routine daily environments. Subjects interrupted their ongoing activity to record their experiences of thought and mood each time they heard the sampling apparatus tone. Between 80 and 150 thought rating vectors with measurements on 42 cognition and mood variables were produced by each subject. The series of rating vectors were submitted to 27 P-type factor analyses and compared to factor patterns produced by groups in the earlier study. Six stable factors similar to the group results (Aggressive/Bad Mood, Pleasant/Sexual, Clear Thought, Daydreaming/Past Sexual, Duration, Self-Critical) appeared in at least 20 of the 27 P-type analyses, despite vast differences in the sample collection environmental conditions. These findings provide evidence that individuals produce factors similar to those produced by groups. This analysis illustrates the idiosyncratic thought characteristics of individuals that are the basis for generalized factor patterns. There are, of course, unique differences among individuals which reflect varied personalities. (Author/ABL)

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P-Type Factor Analyses of Individuals' Thought Sampling Data

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Abstract

Thought samples were collected from 27 subjects who carried a random-tone generator continuously for 3 days as they moved through their routine daily environments. Subjects interrupted their ongoing activity to record their experiences of thought and mood each time they heard the sampling apparatus tone. Between 80 and 150 thought rating vectors with measurements on 42 cognition and mood variables were produced by each subject. The series of rating vectors were submitted to 27 P-type factor analyses and compared to factor patterns produced by groups in a previously described study. Six stable factors similar to the group results (Aggressive/Bad Mood, Pleasant/Sexual, Clear Thought, Daydreaming/Past Sexual, Duration, Self-Critical) appeared in at least 20 of the 27 P-type analyses, despite vast differences in the sample collection environmental conditions. Idiosyncratic characteristics of individual factor patterns, as well as similarities to the R-type group results, are also discussed.

P-Type Factor Analyses of Individuals' Thought Sampling Data

In recent years there has been an increase in research directed towards measuring personal stream of consciousness, or "thought." A number of techniques have been employed in the experimental literature to measure various aspects of thought, including use of retrospective questionnaires, such as the Imaginal Processes Inventory (Singer and Antrobus, 1970), event recording (Pope, 1977), and thinking out loud (Klinger, 1974). However, of particular promise has been the development of thought sampling techniques which allow a subject to move freely throughout his natural environment for an extended period of time, recording his thoughts either by the use of rating forms or self-descriptions. In thought sampling, subjects are interrupted at random intervals and asked to report what they were thinking immediately prior to the interruption. The use of a pocket-size random tone generator has proved highly effective as the means of interruption (Hurlburt, 1979, 1980; Hurlburt, Lech, & Saltman, 1984; Klinger, 1978-1979; Klinger, Barta & Maxeiner, 1980), although other techniques have been used.

When a series of such thought interruptions from one or many subjects are recorded on standardized rating forms, the resultant data lend themselves to the application of factor analytic techniques as a means of describing repeatable thought patterns. Researchers have

reported factor patterns related to a variety of specific thought constructs such as motivation (Klinger, Barta, & Maxeiner, 1980), substance abuse (Huba, Singer, & Segal, 1977), and daydreaming (Klinger 1978-1979). Hurlburt, Lech, and Saltman (1984) showed that the factors extracted from thought sampling data are stable in the sense that the same factors appear when individuals are sampled in widely differing environments. They performed two rather different studies, one which asked subjects to sample thoughts throughout their waking day in their everyday living environments, while the other study asked subjects to sample thoughts while they watched the movie, Annie Hall. They found that the six strongest factors obtained in the two different study conditions were remarkably similar from one study to the next.

While Hurlburt, Lech, and Saltman showed that groups of individuals produce replicable factors when sampled under very different conditions, their results, like those of other thought sampling studies, say nothing about the single individual's thoughts. Does John Doe's thinking share the same characteristics as those of a group of individuals? Up to now, as far as we know, that question has not been addressed. The present paper uses a technique called P-type factor analysis and applies it to Hurlburt, Lech, and Saltman's data to begin to answer that important question.

Cattell (1973) has identified several different forms of factor analysis, of which two are relevant here. An "R-type" factor analysis is the most common type found in the literature. In R-type analyses,

many different subjects are measured on a number of different scales, and thus each subject supplies a single sequence of measurements or "vector" of data. Each of these vectors (one from each subject) are pooled together and then factor-analyzed. Such was the case in Hurlburt, Lech, and Saltman (1984). In that study, thoughts were collected by use of a randomly signaling beeper device. Subjects quantified their thoughts at each beep by filling out a series of vectors of 42 ratings each, which were then pooled together, producing thousands of vectors of thought ratings which Hurlburt, Lech, and Saltman factor analyzed using the R-type analysis technique.

On the other hand, "P-type" factor analysis uses only one subject instead of the many subjects required in R-type analyses. In P-type analysis, one subject is measured on each of the scales repeatedly; thus, each subject supplies vectors of data on many different occasions, and the vectors from these occasions are pooled together to provide the data set on which the factor analysis is based. Thus, the main distinction between R-type and P-type factor analysis is that in R-type analyses, many subjects each supply one vector, and the analysis is across subjects, while in P-type analyses, only one subject supplies many vectors (one for each occasion), and the analysis is across the occasions on which this subject is measured.

P-type factor analyses are very rare, since they require that one individual be measured on at least 30 variables, and this measurement procedure be repeated on at least 80 separate occasions. This is a situation which one only very infrequently obtains in the scientific

literature, since it requires a single subject to be measured at least 2,400 times. The thought sampling data collected by Hurlburt, Lech, and Saltman provide such an infrequent circumstance, in that individual subjects in the first of their studies each provided vectors of 42 observations, sampled on between 80 and 150 occasions. Thus, single subjects each provided the more than 2,400 data points that satisfy the requirements for P-type factor analysis. This allows us to ask the important question: Do individuals produce the same factor patterns when subjected to a P-type factor analysis as do groups of subjects when subjected to an R-type analysis? Stated another way, Hurlburt, Lech, and Saltman showed that groups of individuals produced (R-type) factors such as Aggressive/Bad Mood, Pleasant/Sexual, etc. Is it also the case that single individuals would produce similar (P-type) factors?

Method

The present study is based upon the first study (or "natural environment study") reported in Hurlburt, Lech, and Saltman (1984). In that study, 39 undergraduate volunteers from an introductory psychology course were interrupted randomly as they moved through their natural daily environments throughout their waking day. Interruptions were signaled by a "beep" from a random interval tone-generator which signaled on an average of every 20 minutes, with the shortest random interval being a few seconds and the longest interval one hour. Subjects were also supplied with a pad of rating

forms which had Likert-type scales for 42 cognitive and affective variables (Table 1). Students were instructed to use the apparatus from wake-up time to bedtime for a period of 3 days. During this 3-day period, they were to wear the random interval generator continually and to interrupt their ongoing activity at the moment they heard the apparatus tone. At that time, they were immediately to fill out one of the rating forms, rating their thought and associated mood on the 42 Likert-type scales as the thought and mood were occurring at the instant that they received the interruption.

The present report reanalyzes the data from 27 of the original 39 subjects, since those 27 subjects each produced more than 85 vectors of thought ratings over a 3-day period and thus were eligible for P-type factor analysis. The remaining 12 subjects each produced less than 85 rated thoughts so were excluded from the present analysis. The thought rating vectors for each of the eligible 27 individuals were subjected to P-type factor analyses using varimax orthogonal rotation, which was the same rotational procedure used in Hurlburt, Lech, and Saltman's R-type analysis. Thus, the present analysis involves 27 separate factor analyses for comparison to the original R-type analyses.

One of the first decisions to be made in a factor analytic procedure is how to determine the number of factors to be extracted. In the present study, three possibilities were considered. First, the minimum factor eigenvalue could be set at 1.0. When that criterion was employed, each of the 27 subjects produced between 10 and 18

factors. Hurlburt, Lech, and Saltman's two 1984 studies found that the strongest six factors appeared in both of their studies, but that the remaining factors were different from study to study. Therefore, a second alternative attempted in the present analysis was to limit the number of factors extracted by the P-type analysis to six. The third alternative was a compromise between the first two, namely, to limit the number of factors extracted to eight, thus allowing the six replicable factors to appear but also allowing for several idiosyncratic factors to be produced for each individual. When considering the question whether the six R-type factors identified by Hurlburt, Lech, and Saltman appear in the individual P-type analyses, the three methods provided strikingly similar results. The "best" results, in the sense that the previously identified six (R-type) factors were produced most clearly among the individual (P-type) factors, were obtained with the eight-factor method, so it is those results that are reported here. However, it should be emphasized that the six-factor results and the eight-factor results were highly similar and led to nearly identical conclusions.

Results

The results from Hurlburt, Lech, and Saltman's first study (1984) are reproduced here as Table 1 to facilitate comparisons with the P-type factors extracted in the present analysis. The six factors on Table 1 are the six strongest factors in the two R-type studies previously conducted. A primary aim of the present analysis was to

determine whether these factors are also found in P-type analyses conducted on individual subjects.

There is no universally accepted procedure for determining whether a factor appears in two different factor structure matrices. The present analysis makes that determination using the so-called "similarity index" s (Cattell & Baggaley, 1960; Gorsuch, 1974), which for these data is applied as follows. For each of the two factors which are suspected of being similar, identify the seven factor loadings of largest absolute value (this number depends on the number of variables in the analysis; see Cattel and Baggaley). These variables are called the "salient variables." Count the number of matches, that is, salient variables, which occur in both factors. This number of matches is called the "similarity index," s. If $s \geq 3$, the two factors are significantly similar ($p \leq 0.01$ that 3 out of 7 salient variables will match due to random fluctuations).

Table 1 presents the "large" ($r \geq 0.25$) factor loadings for each of the R-type factors in the previous study, In two of the factors (Duration and Self-Critical), the seven largest loadings are presented even though they are not large by the $r \geq 0.25$ criterion, since the similarity index requires that seven salient variables be identified. However, the Duration factor provides a striking example of how the similarity index cannot be applied blindly, but must be used with judgment, since there are two variables (thought duration and mood duration) which are clearly the most important, and although a pair of factors could have matches on the other five variables and

thus have a significant $\underline{s} = 5$, they would not be called similar unless these two obviously important variables had large loadings.

Comparison factor analysis results for the 27 subjects are shown in Tables 2-7. Since each of these tables presents results taken from 28 (1 R-type and 27 P-type) separate factor analyses, the construction of these tables is described in some detail. Table 2 considers the Aggressive/Bad Mood factor, which was the largest R-type factor identified by the previous studies. The seven salient variables from the R-type factor are the column headings of Table 2. The first row of Table 2 is the salient variables (seven largest loadings) from the R-type Aggressive/Bad Mood factor; that is, the seven largest loadings from the first column of Table 1. The R-type factor variable loadings are positioned in the table in descending size from left to right (considering loading absolute values), i.e., "angry mood," with a loading of 75 is the first variable listed, and "revulsed," with a loading of 47, is the last, or furthest right, on the row. The remaining rows in Table 2 are the results of the 27 individual P-type factor analyses and were obtained as follows: Consider the second row of Table 2. Subject #1's thought data vectors were subjected to a P-type factor analysis which rotated the strongest eight factors. The question was asked, "Does one of these eight P-type factors match the R-type Aggressive/Bad Mood factor previously identified?" In this case, the answer was "Yes" since a factor having a match with similarity index equal to 6 could be identified. The loadings from this P-type factor on the 7 (R-type) salient variables were then

entered into the second row of Table 2. Inspection will show that this subject's pattern of factor loadings was strikingly similar to the loadings produced by the R-type analysis, and so in this case, we are surely convinced that subject #1 produced a P-type Aggressive/Bad Mood factor that is highly similar to the group's R-type factor. We may also be interested in what other variables loaded heavily on this subject's Aggressive/Bad Mood factor. Those results are found in the last column of Table 2, where the variable numbers indicate that the variables scared (#26), (not) delighted (-30), (not) pleased (-40), and bored (41) also have loadings greater than 0.35 on the P-type factor. Note that the numbers in the last column of Table 2 are not factor loadings but rather are variable numbers, and the signs indicate where the loadings are negative.

The next (third) row of Table 2 presents the same information for the second subject. That is, the second subject's P-type analysis did indeed find a factor matching the R-type Aggressive/Bad Mood factor, and the loadings from that P-type factor appear in the third row of Table 2.

Subject numbers 13, 15, 17, 19, 20, 23, and 26 each produced more than one P-type factor which matched ($s \geq 3$) the R-type Aggressive/Bad Mood factor. In those cases only the "best fit" factor is presented in the table. In most cases, the selected "best fit" factor either had a higher calculated similarity index, or contributed a greater amount of variance to the system than did those factors not selected. However, in some cases, a subjective best-fit determination

was made based upon inspection of both the salient and non-salient variable combination patterns, and the final factor selected did not meet either of the two above criteria.

Tables 3 through 7 are constructed similarly. Thus, the first row of Table 3 contains the R-type salient variable loadings for the Pleasant/Sexual factor, namely the seven largest loadings from the second column of Table 1. The second row of Table 3 is the result of asking the question, "Did the P-type factor analysis for Subject #1 produce a factor which was similar to the R-type Pleasant/Sexual factor?" In fact, for this subject, there was not such a match with $\underline{s} \geq 3$, so the second row of Table 3 indicates "no similar factor."

We may now turn to the overall result trends to answer the question, do individuals produce (P-type) factors which are similar to the (R-type) factors which groups produce?

All but one of the 27 subjects produced a P-type factor which significantly matched ($\underline{s} \geq 3$) the Aggressive/Bad Mood R-type factor (Table 2). For both the Pleasant/Sexual and Clear Thought R-type factors, 22 of the 27 subjects generated at least one similar P-type factor (Tables 3 and 4). The Daydreaming/Past Sexual and Self-Critical R-type factors each had significant matches with 20 of the 27 subjects (Tables 5 and 6). Interestingly, in half of those cases where subjects produced a P-type factor similar to the Self-Critical R-type factor, that same P-type factor was also significantly similar to the Aggressive/Bad Mood R-type factor.

For the Duration factor (Table 7), 23 out of the 27 P-type

analyses produced factors similar to the R-type Duration factor. However, the Duration factor has two variables, thought duration and mood duration, which have loadings that are much greater than any of the other loadings on that R-type factor. Therefore, Table 7, which compares the Duration R-type and P-type factors, includes those P-type factors where $s \geq 2$ when both of the actual variables of thought duration and mood duration were salient. For those cases where $s \geq 3$, but both duration measures were not in the matching salient variables, "no similar factor" was reported (Table 7). Although a similarity index of $s = 2$, when comparing the top seven variables of two factors, is only significant at the $p = 0.10$ level, inclusion of these two variables better represents a match to the Duration R-type factor than would other factors wth a higher number of similar variables that excluded them. This is especially true since in the original study these two duration variables were the only ones loading at ≥ 0.16 on the R-type Duration factor.

Percentage of total variance contributed by each significant "best fit" factor is presented in Table 8. Table 8 shows that the number of factor matches (out of 6 possible) ranged from one to six with about half of the subjects producing significant matches on all six factors. The total variance contribution ranged from 3.8% to 58.2% for the 27 subjects, with the median variance accounted for by the significantly matching P-type factors being 42.5%. It should be noted that for some subjects, inclusion of multiple factors with $s \geq 3$ would increase the amount of described variance. For example, for

subject #12, total explained variance in the data would increase from 34.3% to 58.2% if the two additionally produced Daydreaming/Past Sexual P-type factors, and one additional Clear Thought P-type factor (all $\underline{s} = 3$), were included in the total, rather than only the single factors determined to represent the "best fit."

Discussion

Hurlburt, Lech, and Saltman (1984) reported that when groups of individuals were asked to rate their private experiences of cognition and affect, significant and stable patterns of these ratings emerged despite differences in the environmental sampling conditions. The results of the present study have provided us evidence that single individuals also produce factors which are similar to those produced by groups. Each of the six R-type factors described in two studies by Hurlburt, Lech, and Saltman in 1984 (Aggressive/Bad Mood, Pleasant/Sexual, Clear Thought, Daydreaming/Past Sexual, Duration, and Self-Critical) appeared in at least 20 of the 27 P-type factor analyses summarized in Tables 2-8 of this paper. However, what these 27 P-type analyses also provide us with is insight into the idiosyncratic thought characteristics of individuals that are the framework for the observable generalized factor patterns. One example of these individual differences can be seen by examination of Table 3, the Pleasant/Sexual factor. Some of the subjects clearly fall into different dimensions of this R-type factor. Subjects #4 and #22, for example, produced a matching P-type factor which loaded heavily on the

salient variables aroused, sexual, and other people. Other individuals, such as subjects #8 and #15, loaded only on the salient variables delighted, pleased mood, interesting, and pleasant thought. In other words, the characteristics of some individuals' pleasant thought have primarily a sexual connotation, while in other individuals, this is not the case.

There were instances in the P-type analyses in which the 3 or more salient variables for a factor matched those salient variables from the R-type analysis, but where one of the loadings for these salient variables bears the opposite sign, or direction of correlation. In one example, seen on Table 4 comparisons with the Clear Thought R-type factor, subject #14 produced a P-type factor with matching salient variables of clear thought, active mind, and interesting. However, this subject also loaded positively on the mind wandering variable, whereas on the R-type factor, this variable had a negative correlation load. Thus, for this individual, a wandering mind was associated with clear, interesting thought, while for most subjects, a non-wandering mind was associated with clear, interesting thought. Similarly, for subject #21, the clear thought, active mind, and attentive variables on the P-type factor were associated with a positive loading on the distracted variable, as opposed to the negative relationship for this variable which characterized the R-type Clear Thought factor. In other words, subject #21 characteristically associated distracted thought with an active mind, clarity of thought, and attention, which was different from the salient variable

relationships characterizing clear thought for the group of individuals described in Hurlburt, Lech, and Saltman (1984).

For each of the six R-type factors, there were distinct differences in how important the individual salient variables were to the composition of the matching P-type factors. For example, on Table 2 we see that 26 of the 27 P-type analyses produced a matching P-type Aggressive/Bad Mood factor. Within these 26 P-type Aggressive/Bad Mood factors, 23 subjects loaded significantly and positively on the angry mood variable. In other words, only subjects #12, 14, and 17 produced an Aggressive/Bad Mood factor which did not include angry mood (variable #39) as one of its salient variables. On the other hand, only 8 subjects produced an Aggressive/Bad Mood P-type factor which included revulsed as one of the salient variables. Similarly, on Table 3 we see that 22 of the 27 P-type analyses produced a matching Pleasant/Sexual P-type factor. Of these 22 subjects, 16 produced a Pleasant/Sexual factor which included delighted as one of the salient variables, but only 8 of the P-type factors included sexual thought or thoughts about other people as salient variables. Recall that the order of the salient variable columns in Tables 2 through 7 was chosen based upon decreasing absolute value of the salient variable loadings in the R-type analysis. Examination of all the summary tables reveals a similar decreasing trend in the number of subjects for whom a particular variable loading is ≥ 0.25 on the various P-type factors. For example, on Table 4, we see that 21 subjects (all except #3) produce loadings on the clear thought

variable that were "large," i.e., $\geq$ 0.25. On the other hand, only 9 subjects produced a P-type Clear Thought factor with "large" loadings on the not distracted variable. The greatest number of small loadings and lack of salient variable matches was found in the Duration factor and was among the five non-duration variables (Table 7).

We can also see individual differences in the P-type factors produced by examination of the last column on Tables 2-7, which shows additional non-salient variables with very large loadings ($\geq$ 0.35) that contribute to each P-type factor. There are some similarities: for example, variable #30, (not) delighted, appears as an additional important variable in eight of the P-type factors described in Table 2. However, in general, there are more differences than similarities in which variables supplementally contribute to the composition of each matching P-type factor. For example, on Table 2, both subjects #5 and #6 produced a P-type Aggressive/Bad Mood factor with a similarity index of $s = 6$. This factor was characterized in both cases by the significant loading of salient variables angry mood, irritated, aggressive thought, unpleasant, sickened, and (not) pleasant. However, for subject #5, the only other variable with a large loading ($\geq$ 0.35) was the (not) pleased variable (#40). For subject #6, on the other hand, the variables (not) interesting (#22), scared (#26), sarcastic (#29), (not) delighted (#30), and (not pleased (#40) are loaded at $r \geq 0.35$. Since the interpretation of any given factor is based both upon those variables which are related to the factor, and those variables which are <u>not</u> related, these differences

color the interpretaton of each P-type factor, even though both are clearly an Aggressive/Bad Mood factor. These data suggest that individual differences between many of the P-type factors may be primarily a question of subtle connotations or degree of intensity by which each individual characteristically experiences or rates a specific pattern of thought.

Of particular interest in the P-type analyses are the results from subject #11, who produced only one P-type factor (Clear Thought) which was similar to the Hurlburt, Lech, and Saltman R-type factors. This single factor accounted for only 3.8% of this subject's overall correlation variance. When subject #11's data (n = 118) were factor analyzed with an eigenvalue > 1.0 criterion for factor inclusion, one additional matching factor (Pleasant/Sexual) emerged. In that analysis, a total of 18 factors were produced, but the total variance contribution from factors similar to the R-type factors described in Hurlburt, Lech and Saltman was only increased from 3.8% to 11.0%.

We were interested in knowing whether any of the non-similar, idiosyncratic P-type factors produced by subject #11, or by any of the other 27 subjects, were characterized by replicable factor structures that had not been described in the original R-type analyses. Recall (Tables 2-7) that at least 20 P-type analyses (out of the 27 possible) produced factors similar to each of the R-type factors described in Hurlburt, Lech, and Saltman (1984). We hypothesized that some as yet unidentified factor might exist that would be important, i.e., occurring in five or more P-type analyses. To test this hypothesis,

those P-type factors produced by the 27 subjects which were not similar to any of the R-type factors previously described (63 P-type factors in total) were listed side-by-side on a table. This table included only those variables for each factor which either 1) had loadings $\geq$ 0.35, or 2) were the salient (top seven) variables, regardless of absolute size. These 63 P-type factors were then visually scanned to detect any new, repeating variable patterns that might be identified. There were no clearly defined new factors found in this process that repeated across multiple subjects, although there were variable pattern tendencies that emerged. For example, ten subjects produced a P-type factor which included noticeable combinations of the variables (not) about the present (#-1), about the future (#3), about others' (#9), felt movement (#12), saw images (#13), about others' personal lives (#21), thought was interesting (#22), and the mood variable, aroused (#38). However, it was not the case that all these variables were salient (i.e., comprised the top largest loadings) in all 10 factors. Rather, a maximum of only 4 of these variables appeared in any given P-type factor which might be counted. In other words, occasional variable patterns were observed in the idiosyncratic P-type factors; however, none of these could be considered a strong, stable factor structure that warrants precise description.

In summary, then, the factor structures produced in 27 P-type factor analyses are remarkably similar to those reported in 1984 by Hurlburt, Lech, and Saltman (1984) from the R-type analyses of data

for groups of indivduals in two greatly differing environmnents. Each of the six R-type factors described in Hurlburt, Lech, and Saltman was similar ($p \leq 0.01$) to factors produced in at east 20 of the 27 P-type analyses we compared. Furthermore, our examination of the idiosyncratic P-type factors produced by the 27 subjects in these analyses (i.e., those that were not similar to any R-type factor) revealed no consistent repeating factor patterns that were strongly distinct from the R-type factors previously described. However, from the data presented throughout this discussion, it is also clear that when answering the earlier raised question if John Doe's thinking shares the same characteristics as that of a group of individuals, we must be careful to guard against an unequivocal "yes." Certainly the overall trends for single individuals are similar to group results. Nevertheless, there are an abundance of unique, idiosyncratic differences among the individual P-type factors which reflect underlying personality dimensions and dissimilar environmental conditions which must be considered when asking the question, "How do people think?"

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TABLE 1. R-TYPE FACTOR LOADINGS[a] PRODUCED BY SUBJECTS THOUGHT-SAMPLED IN THEIR NATURAL ENVIRONMENTS (Modified from Hurlburt, Lech, and Saltman, 1984).

Rating Scale Variable	Aggressive/ Bad Mood	Pleasant/ Sexual	Clear Thought	Daydreaming/ Past Sexual	Duration	Self-Critical
Thought						
1 - Present				-57		
2 - Past				40		
3 - Future						(22)[b]
4 - Related to activity				-52	(12)	
5 - Pleasant	-50	51				
6 - Unpleasant	65					(22)
7 - Sexual		45				
8 - Aggressive/angry	69					
9 - About others		40		27		(-20)
10 - Self-critical						50
11 - Several thoughts		26				
12 - Felt movement		28				
13 - Saw image		36				
14 - Distracted			-33			
15 - Heard sounds		25				
16 - Thought in words			27			
17 - Thought was clear		25	53			
18 - Forgot thought			-51			
19 - Mind wandering			-34	25		
20 - Thought of mechanical things						
21 - About others' personal lives		36		32		
22 - Thought was interesting		52	37		(10)	
23 - Active mind		33	44		(16)	
24 - Daydreaming		29		36		
25 - Thought duration					71	
Mood						
26 - Scared	26					38
27 - Bashful						
28 - Attentive			36	-30	(12)	
29 - Sarcastic	40					
30 - Delighted	-31	54				
31 - Revulsed	47					
32 - Surprised		29			(-14)	
33 - Guilty	26					47
34 - Downhearted	33					37
35 - Mocking	33					
36 - Irritated	71					
37 - Sickened	54					
38 - Aroused		46				
39 - Angry	75					
40 - Pleased	-41	51				
41 - Bored			-27			
42 - Mood duration					74	

[a]Raw data normalized for each subject; loadings less than 0.25 suppressed, decimal point omitted.
[b]Parenthesized loadings are less than 0.25 but are provided to present the seven largest variable loadings for each R-type factor.

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TABLE 2: AGGRESSIVE/BAD MOOD FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses

		FACTOR LOADINGS FOR SALIENT VARIABLES							
Subject	Similarity Index (s)	Angry Mood 39	Irritated 36	Aggressive thought 8	Unpleasant 6	Sickened 37	Not Pleasant 5	Revulsed 31	Other Variables with Large Loadings[a]
R-type factor		75	71	68	65	54	-50	47	29,-40
1	6	75[b]	61	72	77	67	-71	57	26,-30,-40,41
2	4	85	86	53	62	(24)[c]	-28	47	10,33,34
3	3	71	73	29	(4)	81	(-2)	(-14)	35,38,40,41
4	5	82	84	63	90	44	-53	46	29,-30,33,34,-40
5	6	84	87	69	63	73	-55	(17)	-40
6	6	81	81	78	83	60	-75	53	-22,26,29,-30,-40
7	4	74	78	72	72	(-8)	-33	48	-1,2,3,26,33,34,-40
8	5	73	67	73	42	44	-28	(10)	-40
9	6	85	87	72	73	79	-61	79	14,-22,29,-30,-40
10	3	(22)	46	(16)	76	d	(18)	d	16,34
11		No similar factor (s > 3)							
12	4	d	61	d	97	d	(-18)	32	None
13[e]	4	72	79	72	57	(16)	-51	(13)	14,-19,20,26,32
14	3	(22)	46	57	48	(14)	(1)	(6)	4,10,26,27,32,34
15[e]	5	91	86	92	64	(24)	-54	39	12,29,-30,34,38,-40
16	6	89	83	89	49	68	(-24)	58	None
17[e]	3	(6)	(-6)	(15)	50	60	(-23)	82	-1,2,9,21
18	5	80	66	81	85	38	-84	(-1)	-22,26,-30,34,-40
19[e]	4	96	54	91	59	d	-30	d	2,29
20[e]	4	54	40	58	66	(21)	-58	25	-22,26,-30,34,-40
21	6	89	89	84	75	31	-55	59	29,-30,34,-40,41
22	5	71	96	66	45	d	-25	(11)	20
23[e]	5	91	90	88	80	26	-63	53	10,29,33,-40
24	4	56	64	47	42	69	-33	68	-9,14,18,19,32,33,34,35
25	3	95	34	(10)	52	d	(-8)	89	2,10,29,34
26[e]	4	72	74	55	41	64	-40	71	29,30,33,34,35,-40,41
27	5	87	78	74	66	d	-35	d	None

[a] Variable numbers (see Table 1) which have loadings with absolute value ≥ 0.35 in the P-type analyses.
[b] Italicized loadings are salient variables contributing to similarity index for the P-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings.
[d] Variable contributed zero variance to correlation matrix due to subject recording all entries at the same rating level, i.e., 1.0.
[e] Subjects who produced more than one similar ($s \geq 3$) P-factor; factor loadings show only the "best" match with the Aggressive/Bad Mood R-type factor.

TABLE 3. PLEASANT/SEXUAL FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses.

Subject	Similarity Index (s)	FACTOR LOADINGS FOR SALIENT VARIABLES: Delighted 30	Interesting 22	Pleased Mood 40	Pleasant Thought 5	Aroused 38	Sexual 7	Other People 9	Other Variables with Large Loadings[a]
R-type factor		54	52	51	51	46	45	40	13,21
1		No similar factor (s>3)							
2*	4	53[b]	72	68	58	d	(6)[c]	29	1,17,23,28
3		No similar factor							
4	3	(19)	(12)	(15)	(-1)	(23)	26	30	-10
5*	4	56	26	40	28	87	90	47	-1,2,-4,21
6	3	(24)	(19)	(3)	(1)	34	(17)	54	-1,3,21
7	3	57	(16)	54	65	(19)	(23)	(1)	3,32
8	4	70	43	70	82	25	(20)	41	-6,11,13,-20,-36,-41,42
9*	3	39	42	45	38	75	(9)	(22)	15,28,32,-41
10*	3	78	80	32	65	(-2)	25	(10)	3,13,17,20,29
11		No similar factor							
12	5	37	41	73	84	(5)	(18)	(6)	None
13	3	38	(22)	34	32	(2)	25	(2)	19,23,-41
14	4	54	(15)	37	(17)	35	(12)	37	14,28,32
15*	4	48	46	46	51	(-14)	(11)	(3)	-6,-10,-26,-33
16	3	81	(4)	85	73	(-3)	(-6)	(1)	-6,-34
17	3	34	73	75	75	d	(-2)	(-11)	3,-4,-6,-41
18		No similar factor							
19		No similar factor							
20*	3	60	48	73	58	(9)	(9)	(-2)	-6,-8,-26,-34,-36,-39
21	3	(23)	(-7)	27	(2)	(-8)	d	(20)	-20,-33
22*	3	38	33	35	33	87	79	70	12,13,15,21
23	5	81	43	46	26	74	51	(22)	32
24	3	37	32	31	37	39	67	(10)	12,13,15,17
25	5	80	40	86	53	(19)	29	43	3,21
26*	5	(19)	31	28	35	53	58	(11)	12,15
27	7	56	46	36	45	71	60	37	None

[a] Variable numbers (see Table 1) which have loadings with absolute value > 0.35 in the P-type analyses.
[b] Italicized loadings are salient variables contributing to similarity index for the P-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings.
[d] Variable contributed zero variance to correlation matrix due to subject recording all entries at the same rating level, i.e., 1.0.
* Subjects who produced more than one similar (s>3) P-factor; factor loadings show only the "best" match with the Pleasant/Sexual R-type factor.

TABLE 4. CLEAR THOUGHT FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses.

		FACTOR LOADINGS FOR SALIENT VARIABLES							
Subject	Similarity Index (s)	Clear Thought 17	Didn't Forget 18	Active Mind 23	Interesting 22	Attentive 28	Mind not Wandering 19	Not Distracted 14	Other Variables with Large Loadings[a]
R-type factor		53	-51	44	37	36	-34	-33	None
1		No similar factor (s>3)							
2[e]	4	45[b]	-27	65	72	60	-20	d	1,5,30,40
3	3	(-23)[c]	-62	(10)	(-1)	37	-87	(-11)	-20
4[e]	4	65	-38	57	76	54	(15)	(1)	5,9,13,-18,30,38,40,41
5[e]	4	73	-81	80	67	51	(-15)	(8)	5,9,13,25,40,-41
6	6	67	-58	79	64	62	-61	-39	5,16,30,40
7	3	53	(-13)	75	75	59	21	(-6)	9,10,11,16,21,25,40,42
8[e]	4	35	-29	68	38	32	-18	(7)	-13,-15,16
9		No similar factor							
10		No similar factor							
11	3	74	(8)	25	(-21)[f]	(7)	-52	(-20)	None
12[e]	4	55	-95	39	(18)	(18)	(12)	-92	16
13[e]	5	46	-82	49	70	(12)	(-5)	-37	16
14	3	47	(-17)	47	60	(4)	60[f]	(13)	4,21,40
15	4	60	-65	(-17)	25	27	-47	-59	-11,30,40,-41
16[e]	3	70	-61	(11)	(-11)	(14)	(-8)	-52	-24
17		No similar factor							
18		No similar factor							
19[e]	4	75	-35	62	80	(20)	-70	(-8)	4,5,30,40
20	4	92	-83	90	40	34	(-14)	(-4)	4,9,13,15,16,-41
21	3	56	(4)	58	33	51	(-1)	61[f]	4,5,13,15,30,40,-41
22	4	73	d	65	25	72	-36	(4)	16,-41
23	4	66	-73	55	29	(5)	(-19)	-37	13,24
24[e]	3	44	(-13)	56	53	(23)	(6)	(-11)	16,25,30,38,42
25	5	69	-61	44	(16)	43	-52	-45	-41
26	4	75	-89	(6)	32	(3)	-70	-88	12,13,15,21
27[e]	4	44	-55	32	42	(23)	(-1)	(-3)	13,-34,40

[a] Variable numbers (see Table 1) which have loadings with absolute value ≥ 0.35 in the P-type analyses.
[b] Italicized loadings are salient variables contributing to similarity index for the R-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings.
[d] Variable contributed zero variance to correlation matrix due to subject recording all entries at the same rating level, i.e., 1.0.
[e] Subjects who produced more than one similar (s ≥ 3) P-factor; factor loadings show only the "best" match with the Clear Thought R-type factor.
[f] Salient loading on the P-type factor analysis with opposite sign of salient variable loading on the R-type analysis.

TABLE 5. DAYDREAMING/PAST SEXUAL FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses.

		FACTOR LOADINGS FOR SALIENT VARIABLES							
Subject	Similarity Index (s)	Not Present 1	Not related to activity 4	Past 2	Daydream 24	Others' Lives 21	Not Attentive 28	Other People 9	Other Variables with Large Loadings[a]
R-type factor		-57	-52	40	36	32	-30	27	None
1	4	-26[b]	-61	(17)[c]	(-5)	24	-27	26	-12,-20
2	5	(-24)	-63	(24)	66	(15)	(-23)	35	19,35
3		No similar factor ($s \geq 3$)							
4[e]	5	-73	-70	52	40	46	(-18)	30	13,-16
5[e]	4	-36	-59	49	(11)	46	(2)	47	7,30,38,40
6	4	-48	(-24)	(-1)	(24)	55	(-1)	54	3
7	3	(-14)	-28	(3)	(-15)	43	(-10)	43	10,21
8		No similar factor							
9[e]	3	(-18)	-63	35	67	(10)	(-8)	(5)	19
10	4	-29	(-22)	33	(-1)	69	(-6)	(14)	7,-42
11		No similar factor							
12[e]	3	-63	(-10)	56	(16)	(17)	(11)	45	-11,22
13	4	-61	-75	62	83	41	-45	33	7,13,17,27,30,38,40
14	4	-45	(-17)	68	45	(20)	(-11)[f]	(3)	None
15[e]	3	-54	(-19)	69	25	(9)	(22)[f]	(-1)	None
16	5	-33	-60	27	(3)	77	(-6)	85	-10
17	4	-58	(5)	63	(-2)	37	(16)	35	6,31,37
18[e]	3	-69	-42	76	(-11)	(-1)	(-18)	(-20)[f]	None
19[e]	4	-74	-71	(20)	39	(-9)	-37	(-5)	3
20		No similar factor							
21	5	-92	-67	58	87	(15)	(-14)	39	3,19
22		No similar factor							
23[e]	6	-66	-63	74	47	30	-30	(20)	13
24	4	-49	(-8)	57	(15)	60	43	55	13,22,23,30
25		No similar factor							
26		No similar factor							
27	5	-57	-59	63	(10)	38	-35	51	13,17

[a] Variable numbers (see Table 1) which have loadings with absolute value ≥ 0.35 in the P-type analyses.
[b] Italicized loadings are salient variables contributing to similarity index for the P-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings.
[d] (Footnote not referenced in table; included only for consistency with other similar tables.)
[e] Subject who produced more than one similar ($s \geq 3$) P-factor; factor loadings show only the "best" match with the Daydreaming/Past Sexual R-type factor.
[f] Salient loading on the P-type factor analysis with opposite sign of salient variable loading on the R-type analysis.

TABLE 6. SELF-CRITICAL FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses.

		FACTOR LOADINGS FOR SALIENT VARIABLES							
Subject	Similarity Index (s)	Self-Critical 10	Guilty 33	Scared 26	Down-hearted 34	Unpleasant 6	Future 3	Not other People 9	Other Variables with Large Loadings[a]
R-type factor		50	47	38	37	(22)	(22)[c]	(-20)	None
1		No similar factor ($s \geq 3$)							
2[e]	4	58[b]	82	(16)	58	62	(2)	(14)	8,31,36,39
3		No similar factor							
4[e]	3	(11)	60	31	60	90	(-5)	(11)	-5,8,29,-30,31,36,37,39,-40
5	3	72	38	(4)	(-3)	31	(11)	(-15)	32
6	4	90	89	(-1)	54	(-8)	25	-43	13
7	4	(11)	67	66	50	72	44	(-1)	-1,2,8,31,36,39,-40
8	3	25	89	67	(-9)	39	(8)	(6)	32
9	4	60	57	43	48	(19)	(-6)	(6)	-30,-40
10	3	36	(-1)	d	(6)	(2)	29	-63	-1,-7,-12,-38
11		No similar factor							
12		No similar factor							
13	4	70	80	47	86	(22)	(3)	(-20)	-30,-40
14	4	49	(13)	45	53	48	(-6)	(2)	4,8,27,32,36
15[e]	3	63	76	36	28	52	(11)	(-3)	-5,-22,-30,-40
16[e]	3	47	(24)	25	(-1)	(12)	(-9)	-85	4,-21
17	5	75	(17)	(3)	48	(22)	(19)	-30	None
18	3	68	61	57	(24)	34	(-7)	(9)	2,-5,10,29,-30
19		No similar factor							
20	5	62	(-1)	35	26	(-8)	55	-74	-21
21		No similar factor							
22		No similar factor							
23	4	72	(6)	82	85	50	29	(-22)	-5,31,37
24	3	28	(18)	58	(-4)	70	(13)	(-21)	-5,8,27
25[e]	3	55	(7)	(-1)	64	52	(-5)	(16)	2,29,31,39
26	3	43	(16)	31	(15)	(22)	(10)	(-5)	-29
27	3	68	d	(-2)	(11)	(16)	34	-28	None

[a] Variable numbers (see Table 1) which have loadings with absolute value ≥ 0.35 in the P-type analyses.
[b] Italicised loadings are salient variables contributing to similarity index for the P-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings
[d] Variable contributed zero variance to correlation matrix due to subject recording all entries at the same rating level, i.e., 1.0.
[e] Subjects who produced more than one similar ($s \geq 3$) P-factor; factor loadings show only the "best" match with the Self-Critical R-type factor.

TABLE 7. DURATION FACTOR. Salient variables for the R-type factor analysis are compared to variable loadings (decimal point omitted) for 27 separate P-type analyses.

Subject	Similarity Index (s)	FACTOR LOADINGS FOR SALIENT VARIABLES: Mood Duration 42	Thought Duration 25	Active Mind 23	Not Surprised 32	Attentive 28	Regarding Activity 4	Interesting 22	Other Variables with Large Loadings[a]
R-type factor		74	71	(16)[c]	(-14)	(12)	(12)	(10)	None
1[e]	2	68[b]	48	(-1)	(-1)	(-4)	(4)	(1)	19,-29
2	3	90	88	(8)	(-15)	(22)	(10)	(11)	15
3	4	38	31	78	(5)	(9)	(-7)	84	21,24,-26
4	3	47	53	(7)	(4)	41	(5)	(3)	11,33,34
5	3	59	32	(14)	(-1)	(6)	(15)	41	8,20,30,40
6[e]	2	79	52	(-4)	(-4)	(-5)	(-7)	(8)	None
7	5	72	69	75	(17)	59	(-1)	75	9,10,11,16,17,21,40
8	5	66	62	(13)	-33	55	61	30	-14
9[e]	2	49	54	(21)	(7)	(-1)	(-11)	(10)	-14
10	3	(24)	45	(-7)	d	76	(24)	(-1)	8, 9, 39
11		No similar factor ($s \geq 2$), including both duration variables							
12	3	83	76	(7)	(-11)	(5)	30	(1)	None
13[e]	3	93	84	(6)	(-12)	(4)	(5)	(-14)	None
14		No similar factor							
15	4	58	58	48	(-16)	44	(9)	(2)	26
16	5	35	43	71	-28	45	(2)	67	-18,38
17		No similar factor							
18	3	83	86	39	(-4)	(-10)	(13)	(1)	19,24
19[e]	2	71	37	(6)	d	(12)	(11)	26	-6,30
20	3	82	76	(17)	(-4)	(2)	(12)	32	15,21,30
21	3	90	92	(3)	(15)[f]	(13)	(12)	(5)	None
22	3	60	67	(8)	(1)	(10)	28	(-2)	12
23	4	93	89	(8)	(-13)	(18)	(16)	(-6)	None
24	4	79	88	56	-25	(23)	(-2)	51	16,17,30,38
25		No similar factor							
26	3	64	50	(-9)	-27	(-6)	(14)	(-14)	None
27	3	77	39	(-1)	-44	(-7)	(2)	(10)	-6,-26

[a] Variable numbers (see Table 1) which have loadings with absolute value ≥ 0.35 in the P-type analyses.
[b] Italicized loadings are salient variables contributing to similarity index for the P-type analyses.
[c] Loadings less than 0.25 are parenthesized to highlight small loadings.
[d] Variable contributed zero variance to correlation matrix due to subject recording all entries at the same rating level, i.e., 1.0.
[e] Subjects with similarity index $s = 2$, where both duration variables are represented, are also presented in this table.
[f] Salient loading on the P-type factor analysis with opposite sign of salient variable loading on the R-type analysis.

TABLE 8. PERCENTAGE OF TOTAL VARIANCE CONTRIBUTED BY EACH "BEST FIT" P-TYPE FACTOR.

Subject	Aggressive/ Bad Mood	Pleasant/ Sexual	Clear Thought	Daydream/ Past Sexual	Duration	Self-Critical	Total
R-type factor	14.3%	9.7	5.7	3.2	2.6	2.3	37.8%
1	22.6	-[a]	-	3.7	2.8	-	29.1
2	16.1	13.8	(13.8)[b]	5.4	6.8	(16.1)	42.1
3	10.3	-	4.7	-	5.4	-	20.4
4	16.5	3.0	16.0	9.0	3.9	(16.5)	48.4
5	13.2	9.6	18.2	(9.6)	4.4	4.3	49.7
6	19.3	3.6	9.6	(3.6)	4.2	8.3	45.0
7	13.5	6.4	19.1	3.2	(19.1)	(13.5)	42.2
8	8.1	19.1	5.1	-	6.2	3.6	42.1
9	21.9	10.4	-	3.5	2.8	4.5	43.1
10	8.1	17.6	-	4.0	11.1	6.5	47.3
11	-	-	3.8	-	-	-	3.8
12	5.8	7.4	11.7	5.0	4.4	-	34.3
13	12.8	2.6	6.8	17.9	3.2	7.5	50.8
14	5.6	5.0	10.8	2.8	-	(5.6)	24.2
15	21.3	7.8	10.0	3.8	3.1	(7.8)	46.0
16	14.6	9.4	4.6	8.4	6.4	(8.4)	43.4
17	8.6	10.6	-	(8.6)	-	3.0	22.2
18	19.3	-	-	3.6	7.0	13.0	42.9
19	19.2	-	12.7	6.7	4.1	-	42.7
20	12.4	(12.4)	20.8	-	3.3	3.9	40.4
21	21.0	3.8	7.6	11.1	5.2	-	48.7
22	7.9	22.4	8.9	-	3.3	-	42.5
23	22.2	6.6	4.8	4.1	3.2	17.3	58.2
24	26.9	4.3	11.8	6.6	(11.8)	3.2	52.8
25	18.2	8.0	6.2	-	-	(18.2)	32.4
26	21.5	3.3	10.7	-	2.8	2.0	40.3
27	10.1	6.3	3.9	8.3	4.3	3.1	36.0

[a]No matching factor.
[b]Percentages in parentheses are duplicated factors that are not included twice in summary totals.